Manitoba
Agriculture

formation Update

# Guidelines For Estimating
# Cereal (Barley) Silage
## Production Costs

**DATE: April, 2001**

This guide is designed to provide you with planning information and a format for calculating the cost of producing cereal silage.

The major advantage of silage is that the crop can be harvested when it is ready in almost all weather conditions. Since there are fewer harvesting losses, more nutrients are harvested per acre compared with most other systems. Ensiling permits the use of a wider range of crops including grasses, legumes, grains, corn and miscellaneous salvage crops that have suffered weather damage or weed infestation.

The major disadvantages of silage compared with hay is that it requires more capital investment and labour. Also silage has limited market potential, because trucking costs limit distance to market, it must be produced near the location where it will be fed.

This budget is based on ensiling 1500 acres. Machinery and labour requirements for silage can be met by sharing with neighbours to reduce unit costs. This budget can also be used to compare your costs with custom rate charges.

Producers are encouraged to calculate their own costs of production. Each farm has a different set of costs and yields due to varying soil types, climatic conditions and agronomic practices.



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## Cereal (Barley) Silage - Cost of Production Summary

| A. Operating Costs | Cost/ Acre | Cost/ Ton Wet | Cost/ Ton DM | Your Cost |
|---|---|---|---|---|
| 1.01 Seed | $7.44 | $1.24 | $3.54 | |
| 1.02 Fertilizer | $28.14 | $4.69 | $13.40 | |
| 1.03 Chemicals | $12.00 | $2.00 | $5.71 | |
| 1.04 Field Fuel Costs | $9.89 | $1.65 | $4.71 | |
| 1.05 Moving Fuel Costs | $1.06 | $0.18 | $0.51 | |
| 1.06 Packing Fuel Costs | $1.04 | $0.17 | $0.50 | |
| 1.07 Repair & Maintenance | $5.00 | $0.83 | $2.38 | |
| 1.08 Insurance | $14.05 | $2.34 | $6.69 | |
| 1.09 Miscellaneous | $8.00 | $1.33 | $3.81 | |
| 1.10 Land Taxes | $6.50 | $1.08 | $3.10 | |
| Subtotal Operating | $93.12 | $15.52 | $44.34 | |
| 1.11 Interest on Operating | $3.72 | $0.62 | $1.77 | |
| **Total Operating Costs** | **$96.84** | **$16.14** | **$46.12** | |
| **B. Fixed Costs** | | | | |
| **2. Depreciation** | | | | |
| 2.01 Cropping Equipment | $11.25 | $1.88 | $5.36 | |
| 2.02 Silage Equipment | $10.50 | $1.75 | $5.00 | |
| 2.03 Bunker Storage | $1.00 | $0.17 | $0.48 | |
| **3. Investment** | | | | |
| 3.01 Land | $25.00 | $4.17 | $11.90 | |
| 3.02 Cropping Equipment | $6.88 | $1.15 | $3.27 | |
| 3.03 Silage Equipment | $3.21 | $0.53 | $1.53 | |
| 3.04 Bunker Storage | $0.25 | $0.04 | $0.12 | |
| **Total Fixed Costs** | **$58.08** | **$9.68** | **$27.66** | |
| **C. Labour** | | | | |
| 4.01 Cropping | $8.75 | $1.46 | $4.17 | |
| 4.02 Swathing | $1.25 | $0.21 | $0.60 | |
| 4.03 Harvesting | $1.33 | $0.22 | $0.63 | |
| 4.04 Bunker | $1.33 | $0.22 | $0.63 | |
| **Total Labour Costs** | **$12.66** | **$2.11** | **$6.03** | |
| **Total Cost of Production** | **$167.59** | **$27.93** | **$79.80** | |
| **Estimated yield per acre** | | | | |
| **Wet ton** | | **6.0** | | |
| **Dry ton** | | | **2.1** | |

## Silage (Barley) Cost of Production Worksheet
## Assumptions

1. This budget provides a guideline to determine the cost of production for a silage enterprise.

2. Investment in machinery, equipment and storage is $251.67 /acre. Machinery complement is similar to a grain enterprise except for the combine.

3. A yield of 6 tons per acre was assumed.

4. A land value of $500 per acre was assumed.

| **A. Operating Costs** | | | | **Your Farm** |
|---|---|---|---|---|
| **1.01 Seed** | | | | |
| | | 1.75 | bushels/acre | _____ |
| | x | $4.25 | seed cost ($/bu) | _____ |
| | = | **$7.44** | **$ /acre** | _____ |
| **1.02 Fertilizer** | | | | |
| Nitrogen | | 70 | lbs/acre | _____ |
| | x | $0.27 | cost/lb | _____ |
| | = | $18.90 | $ /acre | _____ |
| $P_2O_5$ | | 33 | lbs/acre | _____ |
| | x | $0.28 | cost/lb | _____ |
| | = | $9.24 | $ /acre | _____ |

| | | | | |
|---|---|---|---|---|
| $K_2O$ | | 0 | lbs/acre | |
| | x | $0.135 | cost/lb | |
| | = | $0.00 | $ /acre | |
| Sulfur | | 0 | lbs/acre | |
| | x | $0.23 | cost/lb | |
| | = | $0.00 | $ /acre | |
| Zinc | | 0 | lbs/acre | |
| | x | $1.50 | cost/lb | |
| | = | $0.00 | $ /acre | |
| **Total** | **=** | **$28.14** | **$ /acre** | |

**1.03 Chemicals**

| | | | |
|---|---|---|---|
| | $12.00 | weed control | |
| + | $0.00 | disease control | |
| + | $0.00 | insect control | |
| **=** | **$12.00** | **$ /acre** | |

**1.04 Field Fuel Costs**

| Operation | Times Over | Width feet | Speed mph | Fuel $/ac. | |
|---|---|---|---|---|---|
| Cultivate | 1 | 48 | 5 | 1.28 | |
| Spray | 1 | 90 | 10 | 0.20 | |
| Cultivate | 1 | 48 | 6 | 1.07 | |
| Plant | 1 | 40 | 5 | 1.54 | |
| Windrow | 1 | 24 | 5 | 1.54 | |
| Forage Harvester | 1 | 24 | 3 | 4.27 | |
| **Total** | | | | **$9.89** | |

### 1.05 Moving Fuel Costs

| | | |
|---|---|---|
| | 6.00 | gross yield tons/acre |
| ÷ | 20.0 | truck capacity (tons) |
| = | 0.3 | trips/acre |
| x | 3 | miles/trip |
| = | 0.9 | total miles/acre |
| ÷ | 2.0 | fuel consumption (miles/gal) |
| = | 2.046 | litres/acre |
| x | $0.52 | fuel cost ($/litre) |
| **Total =** | **$1.06** | **$ /acre** |

### 1.06 Packing Fuel Costs

| | | |
|---|---|---|
| | 1,500 | acres |
| x | 6.00 | tons average yield |
| = | 9000 | tons total yield |
| ÷ | 45 | tons/hour |
| = | 200 | hours |
| x | 15 | litres/hour |
| = | 3000 | litres |
| x | $0.52 | $/litre |
| = | $1,560 | total cost |
| ÷ | 1,500 | acres |
| = | **$1.04** | **$ /acre** |

### 1.07 Repair & Maintenance

| | | |
|---|---|---|
| | 0.04 | percentage rate |
| x | $125 | investment/acre |
| = | **$5.00** | **$ /acre** |

### 1.08 Insurance

| | | |
|---|---|---|
| | $9.40 | crop insurance |
| + | $4.65 | hail insurance |
| = | **$14.05** | **$ /acre** |

### 1.09 Miscellaneous

| | | |
|---|---|---|
| = | **$8.00** | **$ /acre** |

**1.10 Land Taxes**

| | | | |
|---|---|---|---|
| = | **$6.50** | **$ /acre** | _____ |

**1.11 Interest on Operating**

| | | | |
|---|---|---|---|
| | $93.12 | subtotal operating | _____ |
| ÷ | 2 | average | _____ |
| x | 0.08 | interest rate | _____ |
| = | **$3.72** | **$ /acre** | _____ |

## Capital Costs

| | Total | Per Acre | |
|---|---|---|---|
| Land Market Value | $750,000 | $500.00 | _____ |
| Cropping Equipment (does not include combine) | $187,500 | $125.00 | _____ |
| Silage Equipment (includes forage harvester, windrower, trucks and packer) | $175,000 | $116.67 | _____ |
| Bunker Storage | $15,000 | $10.00 | _____ |
| Total Investment | $1,127,500 | | _____ |
| Total Machinery & Bunker Investment/acre | | $251.67 | _____ |

**B. Fixed Costs**

**2. Depreciation**

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

**2.01 Cropping Equipment**

| | | | |
|---|---|---|---|
| | $125.00 | cost/acre | _____ |
| - | $12.50 | salvage value | _____ |
| + | 10 | useful life | _____ |
| = | **$11.25** | **$ /acre** | _____ |

**2.02 Silage Equipment**

| | | | |
|---|---|---|---|
| | $116.67 | cost/acre | _____ |
| - | $11.67 | salvage value | _____ |
| + | 10 | useful life | _____ |
| = | **$10.50** | **$ /acre** | _____ |

**2.03 Bunker Storage**

| | | | |
|---|---|---|---|
| | $10.00 | cost/acre | _____ |
| - | $0.00 | salvage value | _____ |
| ÷ | 10 | useful life | _____ |
| = | **$1.00** | **$ /acre** | _____ |

**3. Investment**

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

**3.01 Land**

| | | | |
|---|---|---|---|
| | $500.00 | cost/acre | _____ |
| x | 0.05 | % investment rate | _____ |
| = | **$25.00** | **$ /acre** | _____ |

**3.02 Cropping Equipment**

| | | | |
|---|---|---|---|
| | $125.00 | cost/acre | _____ |
| + | $12.50 | salvage value | _____ |
| x | 0.05 | % investment rate | _____ |
| = | **$6.88** | **$ /acre** | _____ |

**3.03 Silage Equipment**

| | | | |
|---|---|---|---|
| | $116.67 | cost/acre | _____ |
| + | $11.67 | salvage value | _____ |
| ÷ | 2 | average | _____ |
| x | 0.05 | % investment rate | _____ |
| = | **$3.21** | **$ /acre** | _____ |

**3.04 Bunker Storage**

| | | | |
|---|---|---|---|
| | $10.00 | cost/acre | _____ |
| + | $0 | salvage value | _____ |
| ÷ | 2 | average | _____ |
| x | 0.05 | % investment rate | _____ |
| = | **$0.25** | **$ /acre** | _____ |

**C. Labour**

| | | | | |
|---|---|---|---|---|
| Cropping | | 1 | cropping hours/acre | |
| | x | $10.00 | $/hour | |
| | = | $8.75 | $ /acre | |
| Swathing | | 0.125 | swathing hours/acre | |
| | x | $10.00 | $/hour | |
| | = | $1.25 | $ /acre | |
| Harvesting | | 0.13 | harvesting hours/acre | |
| | x | $10.00 | $/hour | |
| | = | $1.33 | $ /acre | |
| Packing | | 0.13 | bunker hours/acre | |
| | x | $10.00 | $/hour | |
| | = | $1.33 | $ /acre | |
| Total | = | $12.66 | $ /acre | |

**For further information contact your local Manitoba Agriculture office.**

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